

Claims

1. Method for determining points of disturbance in planar structures, in particular from fibres, whereby, by means of at least one signal receiver, comprising photodiodes being arranged in line, determines the brightness of the planar structure and recognizes values of brightness being above a pre-determined threshold value as points of disturbance, characterized in that the planar structure is moved relative to the signal receiver and that the surface-size extent of the value of brightness, laying above the pre-determined threshold value, is being determined.
2. Method according to one of the preceding claims, characterized in that a classification of the points of disturbance takes place based on the number of responding diodes and/or the duration of the response time of the diodes.
3. Method according to one of the preceding claims, characterized in that a small surface of the point of disturbance is rated as genuine disturbing particle and a large surface of a point of disturbance as a permissible brightness fluctuation within the planar structure.
4. Method according to one of the preceding claims, characterized in that for the definition of a point of disturbance an average value and a threshold value are formed, above which the signal processing indicates a point of disturbance.
5. Method according to one of the preceding claims, characterized in that the determined average value is being multiplied by a factor and thus serves as threshold value for the determination of points of disturbance.
6. Method according to one of the preceding claims, characterized in that the average value is formed over all diodes and is then being averaged or integrated through the time.

- 7. Method according to one of the preceding claims, characterized in that for averaging the overall voltage of the diode signals is used.
- 8. Method according to one of the preceding claims, characterized in that the average value is formed over a period of time, which corresponds with a pre-determined distance, in particular, with approximately 5 mm of the planar structure.
- 9. Method according to one of the preceding claims, characterized in that the period of time is selected depending on the doffer speed.
- 10. Method according to one of the preceding claims, characterized in that each photodiode signal is examined one by one with regard to the exceeding of the threshold.
- 11. Method according to one of the preceding claims, characterized in that the width of the point of disturbance is determined by the number of measuring signals laying next to one another which, at the same time, exceed the threshold value.
- 12. Method according to one of the preceding claims, characterized in that the length of the point of disturbance is determined through the doffer speed and the time, during which the threshold value is exceeded.
- 13. Method according to one of the preceding claims, characterized in that the surface of the point of disturbance is determined by multiplication of the determined width and length of the point of disturbance.
- 14. Method according to one of the preceding claims, characterized in that the exceeding of a pre-determined surface-size, in particular 4 mm² is not rated as a point of disturbance.

15. Method according to one of the preceding claims, characterized in that, when a threshold value is exceeded by at least one of the two measuring signals from the extreme outer end of the photodiodes arranged in line, then the point of disturbance is not rated as a point of disturbance.
16. Method according to one of the preceding claims, characterized in that the signals of the signal receiver are being amplified before their evaluation.
17. Method according to one of the preceding claims, characterized in that the planar structure within the zone of the planar structure to be measured is illuminated, in particular, from the side.
18. Method according to one of the preceding claims, characterized in that the planar structure within the zone of the signal receiver is optically magnified.
19. Method according to one of the preceding claims, characterized in that a central processor and the measuring head communicate with one another for the parameter setting, status inquiry and the determination of a point of disturbance.
20. Device, in particular to carry out the method according to one of the preceding claims, with several measuring heads (28) for the determination of points of disturbance in a planar structure (1) being produced in a machine, a card in particular, characterized in that the device comprises a central processor (32), and that the measuring heads (28) are connected through serial and/or parallel data lines with the central processor (32).
21. Device according to the preceding claim, characterized in that the measuring heads (28), for reporting of points of disturbance to the central processor (32), are being connected with the central processor (32), together (as a whole) in summary via a parallel bus.

22. Device according to one of the preceding claims, characterized in that the measuring heads (28) for parameter setting and/or status inquiry are connected with a central processor (32) by way of the central processor (32) via a serial bus.
23. Device according to one of the preceding claims, characterized in that in the measuring head (28) a photodiode array is provided for signal registration, said array comprising single photodiodes (20) arranged next to each other essentially without a gap in between.
24. Device according to one of the preceding claims, characterized in that the photodiodes (20) are essentially arranged in line next to each other.
25. Device according to one of the preceding claims, characterized in that between the photodiodes (20) and the zone (26) to be imaged a lens (34) is arranged, in particular for magnifying of the zone (26) to be imaged.
26. Device according to one of the preceding claims, characterized in that illuminating means (27) are arranged, in particular IR diodes, for the illumination of the zone (26) to be imaged.
27. Device according to one of the preceding claims, characterized in that the illuminating means (27) is arranged laterally, in particular for instance at an angle of 45° in relation to the clothing points of the card.
28. Device according to one of the preceding claims, characterized in that the array of photodiodes comprises ten individual diodes (20).
29. Device according to one of the preceding claims, characterized in that over the width of the doffer (4) of the card, several, in particular five, measuring heads (28) are arranged.

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30. Device according to one of the preceding claims, characterized in that in front of the photodiodes (20) a daylight filter (35) is arranged.
31. Device according to one of the preceding claims, characterized in that the measuring device (10) is tiltably arranged.

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